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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,219	09/26/2002	Jose I. Arno	ATMI-506	9419
25559	7590	04/09/2004	EXAMINER	
ATMI, INC. 7 COMMERCE DRIVE DANBURY, CT 06810			WONG, EDNA	
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DATE MAILED: 04/09/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b> 10/065,219	<b>Applicant(s)</b> ARNO ET AL.	
	<b>Examiner</b> Edna Wong	<b>Art Unit</b> 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46, 48-53 and 55-70 is/are pending in the application.
- 4a) Of the above claim(s) 1-31 and 63-65 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 66-68 is/are allowed.
- 6) ☒ Claim(s) 32-46, 48-53, 57, 58, 61, 62 and 69 is/are rejected.
- 7) ☒ Claim(s) 55, 56, 59, 60 and 70 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

This is in response to the Amendment dated March 12, 2004. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Response to Arguments***

#### **Election/Restrictions**

This application contains claims **1-31 and 63-65** drawn to an invention nonelected with traverse in the Response to the December 12, 2003 Office Action dated March 12, 2004.

#### **Claim Rejections - 35 USC § 112**

I. Claims **32-60 and 66-68** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 32-60 and 66-68 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

II. Claims **32-60** have been rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps.

The rejection of claims 32-60 under 35 U.S.C. 112, second paragraph, has been

withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 102

I. Claims **32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60** are rejected under 35 U.S.C. 102(b) as being anticipated by **JP 2001-189273 ('273)**.

With respect to claims 47, 54 and 59-60, the rejection under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273) has been withdrawn in view of Applicants' amendment. Claims 47 and 54 have been cancelled.

With respect to claims 32-35, 38, 41-42, 46, 48-49, 51 and 57, the rejection under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273) is as applied in the Office Action dated December 12, 2003 and incorporated herein. The rejection has been maintained for the following reasons:

*Sequence I Remains Anticipated*

Applicants state that JP '273 does not teach or suggest the introduction of fluorine gas and halogen species into the processing chamber, without any intervening holdup of said gases between their respective gas sources and the processing chamber, for generation of fluorine (F) radicals and/or fluorine-containing interhalogen (hereinafter  $\text{XF}_n$ ) compounds therein.

In response, Sequence I recites "a processing chamber". The processing chamber as presently claimed is not distinguished from the preliminary reaction vessel 5

disclosed by JP '273. Thus, the fluorine gas **2** and the halogen species **1** disclosed by JP '273 are flowed from respective sources directly in a processing chamber, i.e., the preliminary reaction vessel **5**.

Furthermore, present claim 46 recites that the fluorine gas and the halogen species are mixed before entering the processing chamber. It appears that claim 46 would have opened the present method to a holdup of gases in a mixing chamber.

Applicants state that JP '273 teaches the generation of reactive species in the preliminary reactor before passage of said reactive species to the semiconductor processing chamber. As such, Sequence I of Applicants' claimed invention is not anticipated by the JP '273 reference.

In response, Sequence I recites "a processing chamber". The processing chamber as presently claimed is not distinguished from the preliminary reaction vessel **5** disclosed by JP '273. Thus, JP'273 discloses the generation of reactive species in a processing chamber, i.e., the preliminary reaction vessel **5**.

As to passing the reactive species to the semiconductor processing chamber, there is no claim basis for this. Thus, passing the reactive species to the semiconductor processing chamber is not required in this sequence.

It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz*

893 F. 2d 319, 13 USPQ 1320.

Applicants state that JP '273 actually teaches away from going in the direction of Sequence I of Applicants' claimed invention by stating that when the cleaning gases are generated within the processing chamber, they act as a pollution source, thereby discouraging one skilled in the art from going in the direction of Applicants' claimed invention.

In response, it appears that the cleaning gases generated within the processing chamber was a problem that was being solved by the JP '273 and not what the method of the JP '273 was doing. That is why the method of JP '273 generated CIF in the preliminary reaction vessel 5 (= a processing chamber) before introducing it into the reaction chamber 8 (= CVD system) by opening the bulb 18.

Sequence III Remains Anticipated

Applicants state that JP '273 does not teach or suggest fluorine-containing interhalogen compounds having the general formula  $\text{XF}_n$ , wherein  $\text{X} = \text{Cl}, \text{Br}$  or  $\text{I}$  and  $n = 1, 3, 5$  or  $7$ , with the proviso that when  $\text{X} = \text{Cl}$ ,  $n$  is  $3, 5$  or  $7$ .

Applicants also state that the Examiner inherently admits that the only fluorine-containing interhalogen compound disclosed in JP '273 is CIF. This underscores the fact that JP '273 does not teach or suggest the formation of the  $\text{XF}_n$  compounds claimed by applicants herein.

In response, similar processes can reasonably be expected to yield similar products.

JP '273 teach that the cleaning gas which the chemical reaction in the preliminary reaction vessel **8** is chemical formula (1) - (5), and contains Cl radical, F radical, a ClF molecule, ClF radical, etc. is generated (page 5, ¶ [0060]). This teaching would have suggested that the cleaning gas would have contained other ClF species, and it is deemed that ClF<sub>3,5 or 7</sub> would have been inherently produced as a by-product of the chemical reaction because why wouldn't the irradiation of the chlorine gas and fluorine gas with UV light disclosed by JP '273 produce ClF<sub>3,5 or 7</sub>?

Applicants state that one skilled in the art reading the JP '273 reference would not be motivated to utilize a species such as ClF<sub>3</sub> to clean the interior of a semiconductor processing chamber because JP '273 teaches that ClF<sub>3</sub> usage requires substantial handling precautions and is a pollution source within the semiconductor processing chamber.

In response, the disclosure of reference must be considered for what it fairly teaches one of ordinary skill in the art, pertinence of non-preferred disclosure must be reviewed in such light. *In re Meinhardt* 157 USPQ 270; and MPEP § 2123.

Furthermore, the issue is whether the method of JP '273 generates ClF<sub>3</sub> or not. The method of JP '273 is deemed to inherently generate ClF<sub>3</sub>, and thus would read on the present claims.

**II. Claim 61 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273).**

The rejection of claim 61 under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273) is as applied in the Office Action dated December 12, 2003 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that the Examiner's own admission, JP '273 only teaches the formation of the interhalogen compound CIF, NOT the compound  $\text{CIF}_3$ . Thus, JP '273 does not anticipate the subject matter recited in Applicants' claim 61.

In response, JP '273 teach that the cleaning gas which the chemical reaction in the preliminary reaction vessel 8 is chemical formula (1) - (5), and contains Cl radical, F radical, a CIF molecule, CIF radical, etc. is generated (page 5, ¶ [0060]). This teaching would have suggested that the cleaning gas would have contained other species and it is deemed that  $\text{CIF}_{3,5 \text{ or } 7}$  would have been inherently produced as a by-product of the chemical reaction in the method disclosed by JP '273 because why wouldn't the irradiation of the chlorine gas and fluorine gas with UV light disclosed by JP '273 produce  $\text{CIF}_{3,5 \text{ or } 7}$ ?

**III. Claims 66-68 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273).**

The rejection of claims 66-68 under 35 U.S.C. 102(b) as being anticipated by JP 2001-189273 ('273) has been withdrawn in view of Applicants' amendment.



Claim Rejections - 35 USC § 103

I. Claims **36-37, 39-40, 43-45, 50, 52-53, 55 and 58** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2001-189273** ('273) as applied to claims 32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60 above.

With respect to claim 55, the rejection under 35 U.S.C. 103(a) as being unpatentable over JP 2001-189273 ('273) as applied to claims 32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60 above has been withdrawn in view of Applicants' amendment.

With respect to claims 36-37, 39-40, 43-45, 50, 52-53 and 58, the rejection under 35 U.S.C. 103(a) as being unpatentable over JP 2001-189273 ('273) as applied to claims 32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60 above is as applied in the Office Action dated December 12, 2003 and incorporated herein. The rejection has been maintained for the above reasons.

Applicant's arguments have been fully considered but they are not persuasive.

II. Claim **56** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2001-189273** ('273) as applied to claims 32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60 above, and further in view of **JP 2001-267241** ('241).

The rejection of claim 56 under 35 U.S.C. 103(a) as being unpatentable over JP 2001-189273 ('273) as applied to claims 32-35, 38, 41-42, 46-49, 51, 54, 57 and 59-60 above, and further in view of JP 2001-267241 ('241) has been withdrawn in view of

Applicants' amendment.

**III.** Claim **62** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2001-189273 ('273)**.

The rejection of claim 62 under 35 U.S.C. 103(a) as being unpatentable over JP 2001-189273 ('273) is as applied in the Office Action dated December 12, 2003 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that JP -273 teaches away from flowing the unreacted gases into the processing chamber for reaction therein AND discourages the use of  $\text{ClF}_3$  as a cleaning gas because of the precautions required for handling and because it is a source of pollution in the reaction chamber.

In response, claim 62 recites "flowing fluorine gas and chlorine gas from said sources into a processing chamber". The processing chamber as presently claimed is not distinguished from the preliminary reaction vessel **5** disclosed by JP '273. Thus, the fluorine gas **2** and the halogen species **1** disclosed by JP '273 are flowed from their respective sources into a processing chamber, i.e., the preliminary reaction vessel **5**.

As to discouraging the use of  $\text{ClF}_3$  as a cleaning gas, the disclosure of reference must be considered for what it fairly teaches one of ordinary skill in the art, pertinence of non-preferred disclosure must be reviewed in such light. *In re Meinhardt* 157 USPQ 270; and MPEP § 2123.

Furthermore, the issue is whether the method of JP '273 generates  $\text{ClF}_3$  or not.

The method of JP '273 is deemed to inherently generate  $\text{ClF}_3$ , and thus would read on the present claims.

### ***Response to Amendment***

#### ***Drawings***

The replacement sheets of drawings were not received in the Response to the December 12, 2003 Office Action dated March 12, 2004.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims **32-33, 38, 46 and 57** are rejected under 35 U.S.C. 102(a) as being anticipated by **JP 2001-267241** ('241).

JP '241 teaches a method for in-situ generation of fluorine radicals and/or fluorine-containing interhalogen compounds for use in cleaning a processing chamber, comprising the steps of:

- (a) providing a fluorine source **34** for supplying fluorine gas;
- (b) providing a halogen source **32** for supplying at least one halogen species selected from the group consisting of  $\text{Cl}_2$ ,  $\text{Br}_2$ , and  $\text{I}_2$ ;

wherein said method is characterized by at least one of the following sequences

(I) and (III) of steps:

(I) (i) flowing the fluorine gas and the halogen species from said respective sources therefor into a processing chamber **44** (= pyrogenetic-reaction machine, i.e., heat exchanger) communicatively connected with said sources, without any intervening holdup of said fluorine gas and halogen species between the respective sources and the processing chamber; and

(ii) generating the fluorine radicals and/or fluorine-containing interhalogen compounds by introducing external energy from an energy source into the processing chamber **44** (= pyrogenetic-reaction machine, i.e., heat exchanger) containing the fluorine gas and the halogen species (page 3, ¶ [0020] to page 4, ¶ [0025]; and Figs. 1 and 2); and

(III) (i) flowing the fluorine gas and the halogen species into a processing chamber **44** communicatively connected with the fluorine source and the halogen source; and

(ii) generating the fluorine-containing interhalogen compounds by introducing external energy from an energy source into the processing chamber **44** containing the fluorine gas and the halogen species, wherein the fluorine-containing interhalogen compounds have a general formula  $XF_n$ , and wherein  $X = Cl, Br, \text{ or } I$ , and  $n = 1, 3, 5, \text{ or } 7$ , with the proviso that when  $X = Cl$   $n$  is 3, 5 or 7) [page 4, ¶ [0020] to page 5, ¶ [0025]; and Figs. 1 and 2].

In sequence (I) or (III), the fluorine-containing interhalogen compounds have a general formula  $\text{XF}_n$ , and wherein X = Cl, Br, or I, and n = 1, 3, 5, or 7 (page 4, ¶ [0023]).

The energy source supplies thermal energy (page 4, ¶ [0023]).

The fluorine gas and the halogen species are mixed **42** before entering the processing chamber (page 3, ¶ [0022]).

An effluent gas stream discharged by said processing chamber is flowed into a downstream exhaust/abatement system **16** (page 4, ¶ [0025]).

#### ***Claim Rejections - 35 USC § 103***

I. Claims **39-45, 48-53 and 58** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 2001-267241** ('241) as applied to claims 32-33, 38 and 46 above.

JP '241 is as applied above and incorporated herein.

JP '241 does not teach wherein the fluorine gas and the halogen species are separately flowed into the processing chamber and mixed therein to form the fluorine radicals and/or fluorine-containing interhalogen compounds.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was to have modified the method of JP '241 with wherein the fluorine gas and the halogen species are separately flowed into

the processing chamber and mixed therein to form the fluorine radicals and/or fluorine-containing interhalogen compounds because the transpositioning of varying steps, or varying the details of a process, as by adding a step or splitting one step into two does not avoid obviousness where the processes are substantially identical or equivalent in terms of function, manner and result. *General Foods Corp. v. Perk Foods Co.* (DC NIII 1968) (157 USPQ 14); *Malignani v. Germania Electric Lamp Co.*, 169 F. 299, 301 (D.N.J. 1909); *Matrix Contrast Corp. v. George Kellar*, 34 F.2d 510, 512, 2 USPQ 400, 402-403 (E.D.N.Y 1929); *Hammerschlag Mfg. Co. v. Bancroft*, 32 F. 585, 589 (N.D.III.1887); *Procter & Gamble Mfg. Co. v. Refining*, 135 F.2d 900, 909, 57 USPQ 505, 513-514 (4th Cir. 1943); *Matherson-Selig Co. v. Carl Gorr Color Gard, Inc.*, 154 USPQ 265, 276 (N.D.III.1967).

As to wherein the processing chamber is equipped with temperature monitoring and controlling devices, JP '241 teaches that the heat exchanger **44** is heated to 250°C to 350°C (page 4, ¶ [0023]). It is well within the skill of the artisan to use monitoring and controlling devices to monitor and control the heat exchanger within the temperature range of 250°C to 350°C.

As to wherein temperature in the processing chamber is in a range of from about room temperature to about 350°C; wherein temperature in the processing chamber is in a range of from about room temperature to about 100°C; and wherein temperature

within the processing chamber is in a range of from about 280°C to about 350°C, the temperature is a result-effective variable and one skilled in the art has the skill to calculate the temperature that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the processing chamber is equipped with pressure monitoring and controlling devices, this is well within the skill of the artisan because this would have kept the gas from liquefying in the heat exchanger.

As to wherein pressure in the processing chamber is in a range of from about 1 Torr to about 1000 Torr, the pressure is a result-effective variable and one skilled in the art has the skill to calculate the pressure that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the mixing chamber is equipped with temperature monitoring and controlling devices, this is well within the skill of the artisan because this would have kept the gases from liquefying in the piping.

As to wherein temperature in the mixing chamber is in a range of from about room temperature to about 350°C; wherein temperature in the mixing chamber is in a

range of from about room temperature to about 100°C; and wherein temperature within the mixing chamber is in a range of from about 280°C to about 350°C, the temperature is a result-effective variable and one skilled in the art has the skill to calculate the temperature that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to wherein the mixing chamber is equipped with pressure monitoring and controlling devices, this is well within the skill of the artisan because this would have kept the gases from liquefying in the piping.

As to wherein pressure in the mixing chamber is in a range of from about 1 Torr to about 1000 Torr, the pressure is a result-effective variable and one skilled in the art has the skill to calculate the pressure that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

As to further providing at least one bypassing line for flowing the fluorine gas and halogen species, either separately or in mixture, without passing through the processing chamber, this is well within the skill of the artisan to take out samples of the fluorine gas and halogen species, either separately or in mixture, for analysis by a bypassing line.

II. Claim **69** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP**



**2001-267241** ('241) as applied to claims 32-33, 38 and 46 above.

JP '241 teaches a method for in-situ generation of fluorine radicals and/or fluorine-containing interhalogen compounds for use in cleaning a processing chamber, comprising the steps of:

(a) providing a fluorine source **34** for supplying fluorine gas;  
(b) providing a halogen source **32** for supplying at least one halogen species selected from the group consisting of  $\text{Cl}_2$ ,  $\text{Br}_2$ , and  $\text{I}_2$ ;

(c) flowing the fluorine gas and the halogen species into a mixing chamber **42** communicatively connected with the fluorine source and the halogen source;  
wherein said method is characterized by the following sequence (II) of steps:

(II) (i) generating the fluorine-containing interhalogen compounds by introducing external energy from an energy source into the heat exchanger **44** (= pyrogenetic-reaction machine, i.e., heat exchanger) containing the fluorine gas and the halogen species, wherein the fluorine-containing interhalogen compounds have a general formula  $\text{XF}_n$ , and wherein  $\text{X} = \text{Cl}$ ,  $\text{Br}$ , or  $\text{I}$ , and  $n = 1, 3, 5$ , or  $7$ , with the proviso that when  $\text{X} = \text{Cl}$ ,  $n$  is  $3, 5$  or  $7$ ; and

(ii) flowing the fluorine radicals and/or fluorine-containing interhalogen compounds into the processing chamber **12** communicatively connected with the mixing chamber (page 3, ¶ [0020] to page 4, ¶ [0025]; and Figs. 1 and 2).

JP '241 does not teach introducing external energy from an energy source into

the mixing chamber.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was to have modified the method of JP '241 by introducing external energy from an energy source into the mixing chamber because no significance is seen by mixing the individual gases in the piping **42** and mixing the individual gases in the heat exchanger since the processes are substantially identical or equivalent in terms of function, manner and result.

#### ***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter:

Claims **55 and 56** define over the prior art of record because the prior art does not teach or suggest the method of claim 32, comprising sequence (IV), further comprising monitoring and controlling flow rate of the formed fluorine radicals and/or fluorine-containing interhalogen compound into the processing chamber.

Claims **59 and 60** define over the prior art of record because the prior art does not teach or suggest the method of claim 32, comprising sequence (I), (III), or (IV), further comprising supplying an inert gas from a diluent gas source connected with the processing chamber, to dilute the generated fluorine radicals and/or fluorine-containing interhalogen compounds.

Claims **66-68** define over the prior art of record because the prior art does not teach or suggest the method for generating fluorine radicals and/or fluorine-containing interhalogen compounds, comprising the steps of (i) providing, (ii) providing, (iii) providing, (iv) mixing, (v) supplying and (vi) supplying as presently claimed, esp., the step of supplying the inert gas to the enclosure to dilute the generated fluorine radicals and/or fluorine-containing interhalogen compounds.

Claim **70** defines over the prior art of record because the prior art does not teach or suggest the method of claim 69, further comprising the step of flowing the formed fluorine radicals and/or fluorine-containing interhalogen compounds into a holding chamber positioned between said mixing chamber and said processing chamber before entering into the processing chamber.

The prior art does not contain any language that teaches or suggests the above. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

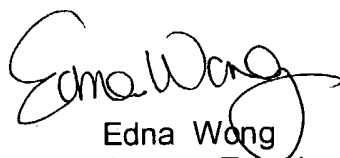
Claims 55-56, 59-60 and 70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt.

Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
April 5, 2004